ABSTRACT

A digital subscriber line network allows a plurality of remote modems to communicate without interfering with the communication to the central office. Each symbol of a superframe is converted to a tone vector, and the tone vectors are integrated over a plurality of superframes. The tone vectors of the data symbols are random, and tend to cancel each other out. The tone vector of the synchronization symbol remains constant among the plurality of superframes, and the sum of these tone vectors over a plurality of superframes becomes large. By identifying the largest integrated tone vectors, the network may identify the position of the synchronization symbol. The modems may then align using the position of the synchronization symbol.

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